AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

Please cancel claims 22-24, 29, 30 and 38-49.

Please add claims 50 and 51, shown below.

1. (Original) A method of selecting input vectors for extraction of representative data for training of an adaptive model, comprising:

receiving signals as input from a plurality of sensors as a set of training vectors;

ordering the set of training vectors according to a corresponding value in each vector of a particular sensor;

dividing the set of training vectors according to equally spaced ranges according to the ordering; and

selecting at least one vector from each of the equally spaced ranges for training the adaptive model.

2. (Original) A method according to claim 1, further comprising the step of including for training the adaptive model each vector that contains a maximum or a minimum value for any given sensor across the set of training vectors.

3. (Original) A method according to claim 1, further comprising carrying out the ordering, dividing and selecting steps for each sensor represented in the set of training vectors.

4. (Original) A method according to claim 1, wherein said ordering step comprises ordering the set of training vectors according to the magnitude of the particular sensor.

5. (Original) A method according to claim 4, wherein a vector is selected from one of the equally spaced ranges through the ordering by magnitude such that the selected vector is the vector with a sensor value highest within the range.

6. (Original) A method according to claim 1, wherein said ordering step comprises ordering the set of training vectors so as to provide a cumulative density function for the particular sensor.

7. (Original) A method according to claim 6, wherein a vector is selected from one of the equally spaced ranges through the cumulative density function such that the selected vector is the vector with a sensor value highest within the range.

8. (Original) An adaptive apparatus for monitoring a system instrumented with sensors, comprising:

data acquisition means for acquiring signals from sensors representative of operational states of the system;

an empirical modeling module responsive to the data acquisition means for providing indications about the operational states of the system;

a data store for storing modeling parameters for use by the empirical modeling module; and

a training module disposed to distill characteristic operational sensor data acquired from the system to a representative set of sensor data for storing in the data store, by selecting from the characteristic operational sensor data time-correlated observations representative of regularly spaced intervals along an ordering of the observations according to values in the observations of a particular sensor.

9. (Original) An apparatus according to claim 8, wherein the training module includes in the representative set of sensor data observations having a maximum or a minimum value for a particular sensor across all the characteristic operational sensor data.

10. (Amended) An apparatus according to claim 8, wherein selection of observations representative of regularly ~~shaped~~ <u>spaced</u> intervals is performed for an ordering for each sensor in the system.

11. (Original) An apparatus according to claim 8, wherein said ordering is according to the magnitude of the particular sensor.

12. (Original) An apparatus according to claim 8, wherein said ordering is according to the cumulative density function for the particular sensor.

13. (Amended) A method of selecting a set of training vectors representative of ~~an adaptive~~ a system, said training set forming an empirical model of said system, said method comprising the steps of:

a) collecting historical data, said historical data including a plurality of system vectors each indicating an operating state of said system;

b) selecting a system parameter [[in]] of said system ~~vector space~~;

c) ordering said plurality of system vectors according to said selected parameter;

d) binning said plurality of vectors ~~vector space for~~ according to said ordering of said selected parameter; and

e) selecting a vector from each bin;

f) selected said vectors forming a training set and said training set forming said empirical model for monitoring system operation.

14. (Original) A method as in claim 13 wherein the step b) of selecting a system parameter comprises identifying dominant driver parameters.

15. (Amended) A method according to claim [[13]] 14 wherein the step b) of selecting system parameters further comprises selecting a bin number, said bin number being used in binning step d) ~~of binning vector space~~, said bin number determining the number of bins in which the plurality of vectors ~~vector space~~ is divided.

16. (Amended) A method as in claim 15 wherein the bin number ~~is~~ provided [[only]] for dominant driver parameters [[and a]] is greater than the bin number ~~of two is~~ used for all other parameters.

17. (Original) A method as in claim 15 wherein said system vectors are ordered in step b) in ascending magnitude order for said selected parameter.

18. (Original) A method as in claim 15 wherein said system vectors are ordered in step b) in descending magnitude order for said system selected parameter.

19. (Original) A method as in claim 15 wherein in the step e) of selecting a vector from each bin, one of the plurality of system vectors is identified as having a value for said selected parameter closest to a bin magnitude of each bin, identified ones being selected for initial inclusion in said training set.

20. (Original) A method as in claim 15 wherein in the step e) of selecting a vector from each bin, one of the plurality of system vectors is identified as having a value for said selected parameter closest to but not exceeding a bin magnitude of each bin, identified ones being selected for initial inclusion in said training set.

21. (Original) A method as in claim 15 wherein in the step e) of selecting a vector from each bin, one of the plurality of system vectors is identified as having a value for said selected parameter closest to but not less than a bin magnitude of each bin, identified ones being selected for initial inclusion in said training set.

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Original) A method as in claim 15, after the step e) of selecting vectors from each bin further comprising the steps of:

f) checking system parameters to determine if other parameters remain unselected; if other parameters are determined to remain unselected,

g) selecting an unselected parameter, said unselected parameter being identified as the selected parameter;

h) returning to step c) and repeating steps c) through h) until all system parameters have been selected; otherwise,

i) eliminating redundant selected vectors; and

j) storing said selected vectors as a training set for modeling and monitoring system operation.

26. (Original) A system for monitoring activity of another system, said system comprising:

a control unit controlling a monitored system;

a data acquisition unit receiving information from said control unit and from said monitored system and providing system snapshots therefrom, system snapshots representing the state of said monitored system relative to the time the snapshot is taken;

a memory storing said system snapshots;

a sorter sorting collected system snapshots responsive to a selected system parameter; and

a vector selector binning sorted snapshots and selecting a vector from each bin and, said selected vector being a system snapshot provided for initial inclusion in a training set.

27. (Original) A system as in claim 26 further comprising:

means for eliminating redundant collected vectors, remaining said vectors forming said training set; and

a memory storing said training set.

28. (Amended) A system as in claim 27, wherein the vector selector divides ~~vector space~~ the range of said selected system parameter into a plurality of evenly spaced bins and selects a sorted snapshot ~~vector~~ from each bin as the selected vector, each said selected vector being identified as having a parameter value closest to a corresponding bin value.

29. (Cancelled)

30. (Cancelled)

31. (Amended) A system as in claim 26 wherein the vector selector divides the ~~vector space~~ the range of said selected system parameter into bins having equal number of system snapshots.

32. (Original) A computer program product for selecting input vectors for extraction of representative data for training of an adaptive model, said computer

program product comprising a computer usable medium having computer readable program code thereon, said computer readable program code comprising:

computer readable program code means for receiving signals as input from a plurality of sensors as a set of training vectors;

computer readable program code means for ordering the set of training vectors according to a corresponding value in each vector of a particular sensor;

computer readable program code means for dividing the set of training vectors according to equally spaced ranges according to the ordering; and

computer readable program code means for selecting at least one vector from each of the equally spaced ranges for training the adaptive model.

33. (Original) A computer program product for selecting input vectors according to claim 1, further comprising computer readable program code means for selecting for inclusion in training the adaptive model each vector that contains a maximum or a minimum value for any given sensor across the set of training vectors.

34. (Original) A computer program product for selecting input vectors according to claim 32, wherein the computer readable program code means for ordering orders the set of training vectors according to the magnitude of the particular sensor.

35. (Original) A computer program product for selecting input vectors according to claim 34, wherein a vector is selected from one of the equally spaced ranges through the ordering by magnitude such that the selected vector is the vector with a sensor value highest within the range.

36. (Original) A computer program product for selecting input vectors according to claim 32, wherein the computer readable program code means for ordering orders the set of training vectors so as to provide a cumulative density function for the particular sensor.

37. (Original) A computer program product for selecting input vectors according to claim 34, wherein a vector is selected from one of the equally spaced ranges through the cumulative density function such that the selected vector is the vector with a sensor value highest within the range.

38. (Cancelled)

39. (Cancelled)

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Cancelled)

47. (Cancelled)

48. (Cancelled)

49. (Cancelled)

50. (New) A computer program product for selecting input vectors according to claim 33, further comprising computer readable program code means for iteratively executing across all sensors in said training vectors, said ordering, dividing and selecting computer program code means.

51. (New) A computer program product for selecting input vectors according to claim 50, further comprising computer readable program code means for eliminating redundant selected vectors.